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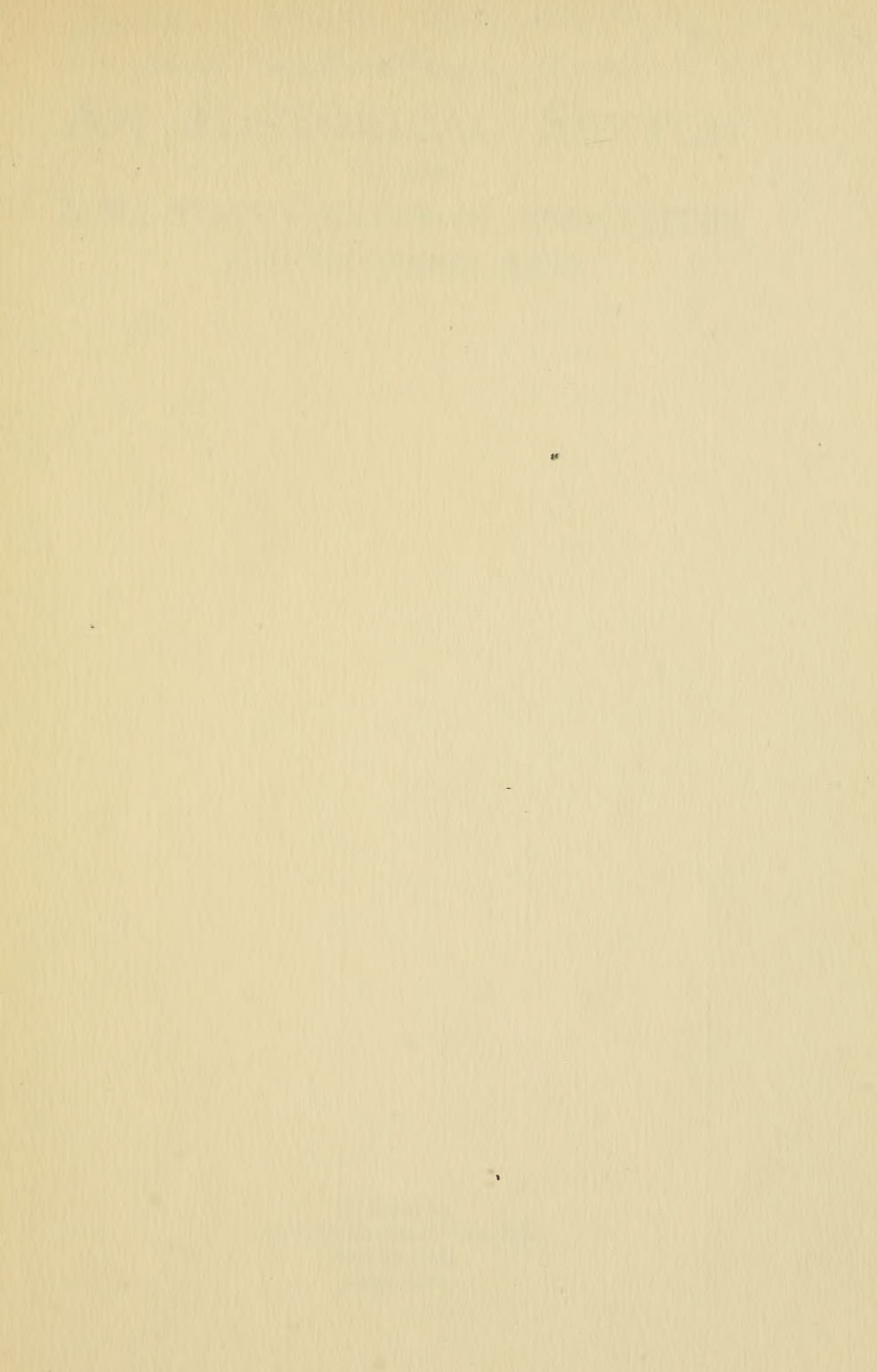
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AN HISTORICAL SKETCH
OF THE
IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS



PUBLISHED FOR
THE SEMI-CENTENNIAL CELEBRATION
JUNE 6-9, 1920
AMES, IOWA



*Iowa State University of Science
and Technology, Ames.*

AN HISTORICAL SKETCH

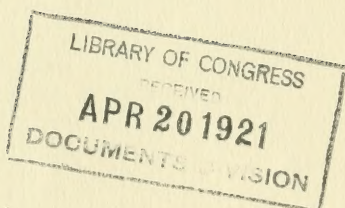
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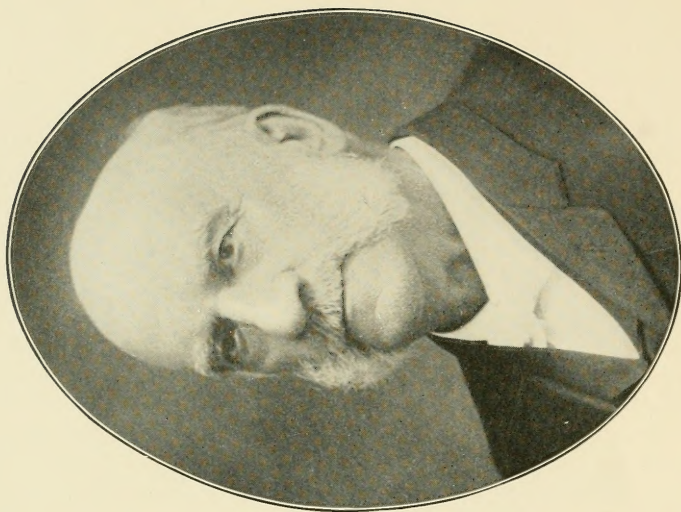
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ADONIJAH S. WELCH
President 1868-1883



SEAMAN A. KNAPP
President 1883-1885

I

ORIGIN AND ESTABLISHMENT

INTEREST in scientific agricultural education in Iowa dates back to the beginning of the history of the commonwealth, pre-dating the actual founding of the College by about twenty years. As early as 1848, the general assembly of Iowa memorialized Congress for the donation of the site and buildings of Fort Atkinson in Winne-shiek County, together with two sections of land, for the establishment of an agricultural college. Altho Congress did not assent to this proposal, interest in the movement to secure public aid for the education of the farming class continued to grow. To provide a means of registering the wishes and demands of those who were especially interested in this movement, there was formally organized at Fairfield, Iowa, on December 28, 1853, the State Agricultural Society of Iowa.

This society at once became the spokesman of people interested in such a college in the state legislature. To the Fifth General Assembly, which convened in December, 1854, it presented a memorial in the form of a bill asking financial support for the State Agricultural Society. Governor James W. Grimes in his inaugural address of December 9, 1854, gave expression to the growing sentiment in favor of a state school of applied science. While the provisions for such a school were taking shape it was proposed that an agricultural bureau be established at the capitol. That, however, was to come later. The memorial was honored, the bill was passed and thus the efforts of the State Agricultural Society to provide for the farming interests a means of advancement in scientific agricultural education became a matter of record.

That there was an active interest on the part of the people in the cause was very evident. Many petitions and memorials were presented to the legislature urging the establishment of a school where information regarding farming pursuits could be obtained. They came not only from representative members of the various districts but also from individuals all over the state. It was urged that adequate provision be made for supplying funds to further the kind of education required by the farming and industrial classes.

In response to this demand the general assembly of Iowa passed a bill, which was signed by Governor Lowe, March 22, 1858, providing for the establishment of a State Agricultural College and Farm, "which shall be connected with the entire agricultural interests of the state." It carried an appropriation of \$10,000 and provided for a Board of Trustees to consist of 11 members, one for each judicial district. The board was instructed to purchase a farm, erect the necessary buildings and keep an accurate system of accounting for all

the operations of the College. It was further authorized to establish professorships, make all needful rules, elect officers and put the College into operation as soon as possible.

The organic act further provided that instruction should be given in the following subjects: natural philosophy, chemistry, botany, horticulture, fruit growing, forestry, animal and vegetable anatomy, geology, mineralogy, meteorology, entomology, zoology, veterinary anatomy, plain mensuration, levelling, surveying, bookkeeping "and such mechanic arts as are directly connected with agriculture. Also such other studies as the trustees may from time to time prescribe not inconsistent with the purposes of this act."

From the very beginning of the movement one of the underlying ideas was that the school be so organized as to dignify manual labor and to give it the respectability and credit which is commonly accorded to the labor of the professional classes. This idea was embodied in the original act in a clause which provided that all students must work at least two hours in the winter and three in the summer, and that no student, unless physically incompetent, should be exempt from such work.

It was not until 1884, sixteen years after the founding of the College, that this regulation was fully abrogated. The sentiment for linking the work of the College with that of the farm and the shop was very strong. For years a careful distinction was made between instructive and uninformative labor, the former including laboratory work and the latter manual labor on College construction and the College farm. A number of buildings, including three homes of professors — provided at that time by the state — were erected largely with student labor. Gradually the restrictions were broken down, however, and the hours of uninformative labor shortened until the uninformative labor of the laboratory was recognized as the sole claim that the College could make on the student.

As a record of the growing enthusiasm for scientific education in agriculture, the proposed Bureau of Agriculture was established at this time, with an office at the capitol of the state, and with the secretary of the Board of Trustees of the College as chief. He was allowed a salary of \$1,000 and the sum of \$1,000 for operating expenses.

Viewed in the light of later events, these beginnings are significant. They expressed the conviction of the people of Iowa that scientific agricultural education was no longer to be denied the citizens of the commonwealth. They furthermore enabled the state to take immediate advantage of the Land Grant College Act which was passed by Congress in 1862.

In response to a notice for the purchase of lands for the Agricultural College, which was issued by the Board of Trustees at its first meeting, convened in Des Moines, December 10, 1859, proposals were received from Hardin, Polk, Story, Marshall, Jefferson and Tama counties. Story County voted \$10,000 of county bonds and sub-

scribed \$4,320 in individual notes. Boone and Story counties together gave 861 acres of land valued at \$6,015 and their subscriptions, together with the appropriation of \$10,000 by the state, amounted to \$31,355. The five sections of land in Jasper County, comprising 3,200 acres and granted to the state by the federal government for the erection of capitol buildings, were diverted, with the consent of Congress, to the use and benefit of the College. The farm selected contained 648 acres and was purchased at a cost of \$5,374.

After a study of the architectural features of the best recognized colleges of the kind, the building committee decided upon a four-story building 52 by 120 feet. The estimated cost was \$30,000, not including any system for lighting or heating. Owing to the serious financial condition of the state, however, no appropriation was expected. But there were sufficient funds on hand to enable the farm to be worked.

The friends of the College now had an opportunity to show their faith and zeal in the new enterprise, for a critical moment had been reached. "The state was heavily in debt, the whole country was suffering from great financial embarrassment and the policy of the legislature was to economize in all directions and cut off every project likely to draw heavily upon its resources." On February 7, 1860, a movement was launched in the legislature to repeal the organic act of March 22, 1858. Only the skillful leadership of the friends of the College prevented the passage of the bill. When it was brought to the floor, friends of the College asked time to consider the proposal and moved that the bill be laid on the table. Falling back upon a parliamentary ruse they raised the point, when an effort was made to secure action on the bill, that it took a two-thirds vote to consider a measure which had been tabled. The point was sustained and the crisis passed for they never got ready to give the bill any further consideration.

Satisfied with being able to retain the establishing act on the statutes, the friends of the College made no effort to secure an appropriation in 1860. Before the session of the legislature for 1862 was convened the Civil War was begun and all thought of an appropriation was postponed. In fact there was almost nothing which could be done until a more auspicious time should arrive. That time, however, came very soon.

The passage of the Federal Land Grant College Act, July 2, 1862, presented a bright prospect for agriculture in Iowa. According to its provisions the state would receive 30,000 acres of land for each senator and representative in Congress, thus making Iowa a total land grant of 240,000 acres. Any state, according to the grant, must erect the necessary buildings, without using for that purpose any of the proceeds of the sale of the lands, within five years from the time of the acceptance of the act. The legislature accepted the grant, September 11, 1862, and appropriated \$1,000 to carry out the provisions in reference to locating the lands. Railroad lands and other lands

were selected to the amount of 199,768 acres, which were valued at \$300,389. By subsequent adjustments with the federal government the acreage of the grant was increased to 294,300.

The problem now was to secure funds for the erection of a college building, for it was evident that with careful management there would very soon be a fund created large enough to provide for the maintenance of the institution. The plans and estimates previously submitted were reviewed, with the conclusion that "the estimated cost of such a building, fully completed and ready for occupation, is \$50,000."

At this moment friends of the state university made a determined effort to attach the Agricultural College to that institution. In the report of the university, issued January 4, 1864, it was formally recommended that the two institutions be united. The desire was further urged in a memorial presented February 3, 1864, by a member of the Board of Trustees of the university. The idea was supported by Ex-Governor Kirkwood and others. The friends of the Agricultural College resisted this attempt to divert the grant from its original purpose. Their objections were presented in the report of the joint visiting committee and concluded as follows:

"We are satisfied that any such attempt at consolidation would result in endless strife, quarrels, jealousy and confusion, and would go far towards destroying the usefulness of both. We believe it to be the duty of the legislature to encourage and sustain both of these valuable institutions by judicious and liberal assistance, while both are left to stand or fall on their own merits."

The friends of the College having succeeded in maintaining it as a separate institution now sought to secure an appropriation for the erection of a college building. The legislature voted \$20,000 for that purpose, March 21, 1864, and it instructed the trustees that the building, which was to be completed at a maximum cost of \$50,000, was to be "enclosed with a roof, windows and doors by October 1, 1865." A system of leasing which had been worked out with remarkable results enabled the College to realize an annual income of \$30,000 for maintenance and support from the very beginning. And so the farm was operated successfully and continuously.

Such was the situation of the Iowa State College when the legislature convened in January, 1866. Governor William M. Stone in his message urged the importance of complying with the condition of the federal act as regards the time of completing the building. Accordingly an appropriation of \$91,000 was made in a legislative act approved April 2. This enabled the trustees to proceed with the formal organization of the College. Their committee on correspondence and investigation reported the following plan: first, there should be a president, four full professors and two assistants; second, the subjects provided in the law should be offered; third, a system of instructive farm labor, with reasonable compensation, from which no one was exempt, should be introduced; fourth, a boarding department under



LEIGH S. J. HUNT
President 1885-1886



WILLIAM I. CHAMBERLAIN
President 1886-1890

supervision and systematically conducted should be provided; fifth, the admission of students should be on the basis of one or more for each representative in the lower house of the general assembly and selections were to be made after examination as to education and moral character; sixth, politics and sectarianism should be excluded and should never be permitted to control the selection of students or faculty; seventh, care should be exercised in the purchase of equipment and furniture; and eighth, three or four non-resident professors, men of eminence in particular sciences, should be secured to deliver lectures to the students during the school year. The development of this plan of organization required both time and experience; the optimism of those having the problem in hand did much to enable the plan to work out successfully.

In response to the needs of the College the legislature in 1868 made appropriations amounting to \$47,750. Of this amount, \$37,750 was appropriated for various up-keep purposes and for three houses for professors and \$10,000 for completing the college building.

The necessary preparations and arrangements having been completed, the Iowa Agricultural College and Farm was formally opened for the admission of students on March 17, 1869. On this date the college building was dedicated, Hon. A. S. Welch was inaugurated as the first president and regular collegiate instruction was begun.

This event marks the formal establishment of the College, altho instruction had already been going on for almost a year to a small group who were taking sub-freshman work. As defined by the Land Grant Act of 1862 the leading object of the new college "shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts, in such manner as the legislature of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

II

THE DIVISION OF AGRICULTURE

I. THE COLLEGE OF AGRICULTURE

When the Iowa Agricultural College was formally opened in 1869, but two courses of instruction were offered; one in agriculture and the other in the mechanic arts, or engineering. Women were permitted to enter either of these courses and take any of the subjects they chose, including a limited number of cultural subjects for which the founders of the College had duly provided. The agricultural faculty consisted of Dr. Norton S. Townsend, who was Professor of Agriculture and Horticulture, and President Welch, who lectured on landscape gardening. It does not appear whether President Welch

lectured on farm animals during the first year, but it is recorded that he did so during some of the later years.

In the following year, the agricultural faculty consisted of James Mathews, Professor of Pomology, and Charles E. Bessey, Instructor in Botany and Horticulture (vegetable gardening); while the duties of the vacant professorship in agriculture were delegated to Professor Mathews, President Welch and Dr. I. P. Roberts, who came to Ames as farm superintendent in August, 1869. The next year Dr. Roberts was made Professor of Practical Agriculture. At the close of 1873 he resigned to accept a similar position at Cornell University, later becoming Dean of Agriculture and Director of the Experiment Station at that institution.

Dr. Roberts did much to give impetus, tone and real scientific and practical value to agricultural teaching in the Iowa Agricultural College. As a pioneer, he blazed the trail leading to higher standards. In his *Autobiography of a Farm Boy*, he pays splendid tribute to President Welch as a man of sterling qualities worthy to rank him among the great college presidents of the country. He also testifies to the fine work and rapid progress which the students of those early days accomplished in spite of their handicaps.

By 1874 the student enrollment had reached about 300, which represented practically a capacity enrollment under the conditions existing at that time. Among the senior students in the last year of Dr. Roberts' work at Iowa Agricultural College was one young man who followed his studies of farm animals with interest and enthusiasm. Following the resignation of Dr. Roberts, this young man, Miliken Stalker, was appointed to fill the vacancy with the title Superintendent of the Farm and Assistant Professor of Agriculture. Three years later, in 1876, he was promoted to the chair of Agriculture and Veterinary Science. During the year 1875 G. E. Morrow was appointed Professor of Agriculture, but after a year's service he resigned to accept a similar position in the Illinois Industrial University at Champaign, which position he filled with credit for 20 years.

In 1879, Agriculture and Veterinary Science were separated into two distinct departments, Dr. Stalker being placed in charge of Veterinary Science to which he was now enabled to give his entire attention, while Seaman A. Knapp was appointed Professor of Agriculture. For the next few years the faculty of the Department of Agriculture consisted of only two men: S. A. Knapp and J. L. Budd, the latter having come to the institution in 1877 as Professor of Horticulture and Forestry. These two men working together succeeded in interesting the students of the Iowa Agricultural College in practical agriculture as a life pursuit. Prior to 1882 only 6 percent of the men then living who had graduated from the College became identified with either practical farming or professional agriculture while nearly 40 percent entered law, medicine or the ministry, 17 percent engaged in teaching or similar professional work, 3 percent became veterinarians and only 9 percent engineers or mechanics. The dreams

of the founders of the institution for a college which would send its graduates into the industries had not yet been realized.

The pressure for better recognition of agriculture resulted in giving marked emphasis to that major line of work by conferring the degree of Bachelor of Scientific Agriculture on students completing this course. Three men received this degree in 1883, which was the first year it was conferred at this institution. During the next few years a considerable number of men graduated with the B. S. A. degree and in later years nearly every one of them achieved positions of honor and influence in professional or practical work along agricultural or horticultural lines.

The awakened interest in agriculture was also manifested by the fact that the students organized an Agricultural Club which for three years published a monthly bulletin, called the *Students' Farm Journal*. But during the years 1883-1890, there came a period of administrative instability during which Presidents Knapp, Budd, Hunt and Chamberlain followed each other in rapid succession. In the nature of things there was a lack of definite administrative policy and the College experienced a retrogression in some of its activities. The total enrollment declined, the Agricultural Club expired and the *Students' Farm Journal* was discontinued.

In 1891, with the coming of William M. Beardshear as president and James Wilson as Professor of Agriculture and Director of the Experiment Station, a new era dawned for agriculture and for the entire institution, an era of rapid expansion and remarkable development, of increasing influence and power. During the Beardshear era the enrollment for the College passed the 1,000 mark and agriculture received its due proportion of emphasis. More liberal state appropriations for buildings and support were secured and various important buildings were erected and equipment secured. The name of the institution was officially changed to the Iowa State College of Agriculture and Mechanic Arts, which name first appeared in the state documents in 1898.

The courses in the Department of Agriculture began to be separated into special lines, which later took rank as departments of the Division of Agriculture. James Wilson was made Dean of the Division; he was the first to hold the title of Dean in this institution.

In February, 1897, Mr. Wilson was called to a position in President McKinley's cabinet as Secretary of Agriculture and was granted an indefinite leave of absence. Later he was made professor emeritus, so that he is still officially listed as a member of the agricultural staff.

C. F. Curtiss, a graduate from the course in agriculture in the Iowa Agricultural College in 1887 and a member of the department staff in 1891, was promoted to the place made vacant by the absence of James Wilson and later was made Dean of Agriculture and Director of the Experiment Station.

Following the death of President Beardshear, the work of the Division of Agriculture received the strong and able support of his suc-

cessors, President A. B. Storms, Acting President E. W. Stanton and President Raymond A. Pearson. It was under President Storms' administration that the fine Hall of Agriculture which accommodates many of the offices and class rooms of the division was built. Under the administration of President Pearson the Plant Laboratory Building, with its modern greenhouses, and the animal husbandry laboratories were constructed. The work of the division has developed till it now includes 12 departments, some of which have several sub-departments. The collegiate instructional staff in agriculture numbers 62. The various buildings which house the work of the division are already so greatly overcrowded that more room is imperatively needed for the present enrollment, to say nothing of the prospective enrollment which appears inevitable in the immediate future.

2. THE IOWA AGRICULTURAL EXPERIMENT STATION

The federal act providing for agricultural experiment stations was passed by Congress in 1887 and the work was begun at the Iowa Agricultural College in the spring of 1888. The records of the College show, however, that important experimental work in agriculture was under way long before this date. In 1880, Professor S. A. Knapp carried on "systematic experimentation in stock raising and in farm products," and later there was made available \$1,000 for an experimental creamery and an annual allowance of \$1,500 for experimental work in agriculture and horticulture.

The organization and management of the station was placed by law under the control of the Board of Trustees of the Iowa Agricultural College. A committee of the board elected R. B. Speer as director and appointed a station chemist, a station botanist and a station entomologist. The director was authorized to employ certain members of the faculty to carry on special work for the station. This staff took over 120 acres of the college farm for experimental purposes. An orchard was planted, experimental plots were laid out and plant breeding experiments were started. It is interesting to note that the plans for the work of the station during the first year or two provided for extensive experiments with crops and soils and work along dairy and horticultural lines. For a very unique reason, comparatively little work was to be done in animal husbandry, as the following statement by the director shows: "Nor will we promise many experiments in breeding or in feeding the domestic animals, because thousands of skillful breeders and feeders are conducting such experiments in all parts of the West." Some feeding tests were carried on, however, for in the second annual report of the station mention is made of a feeding experiment with 12 steers.

In 1891, James Wilson was made head of the Department of Agriculture and Director of the Experiment Station. During his administration, which continued to February, 1897, when he was appointed Secretary of Agriculture, the work of the station developed rapidly. Many bulletins were published dealing with a great variety of prob-

lems. The present director of the station, Dr. C. F. Curtiss, was elected as Mr. Wilson's successor.

The resources and staff of the station have been much increased in the past 20 years. The income of the station in 1899 was \$17,000 and in 1919 \$245,000. During the same period the staff increased from a total of 19 to 59.

In 1902, an appropriation of \$10,000 was received from the state. This was the first of a series of state appropriations that have made possible the study of many problems of great interest to Iowa farmers. Without state money the station would now have an annual income of only \$30,000 and it would not possess its well equipped laboratories, numerous buildings, dairy farm, agronomy farm, apple breeding farm and much of its other equipment.

Under the Adams act of March 16, 1906, an appropriation was received from the United States government which within a few years reached an annual total of \$15,000. With this fund some of the most important scientific research work of the station has been carried on. These investigations have made possible the publication of a series of special bulletins that is known as the *Research Series*. These bulletins, together with the circulars, popular bulletins and soil reports, that are now published by the station, present a striking contrast to the humble beginnings in 1888, when three small bulletins were published. For the year ending June 30, 1919, thirty-one publications of all kinds were issued, comprising 508,000 copies and many millions of pages.

A noteworthy event in 1906 was the purchase by the College of 200 acres of land located one mile south of the campus, to be used largely for investigational work in dairying and poultry. A building program has been carried out on this farm that has given the station one of the best plants for dairy and poultry investigations in the country.

In 1914 a 160 acre farm two miles south of the campus was made available for experimental work in farm crops and soils. Fifty acres are devoted to soil field experiments and about one hundred acres to various farm crops investigations. Much of the work that resulted in the production of the famous varieties of oats, known as Iowa 103 and Iowa 105, and recently the annual white sweet clover, was carried on at this farm. Another notable addition to the land holdings of the station was the purchase of a 17 acre tract at Charles City, containing the Patten collection of seedlings. This tract is used by the pomology section for important fruit breeding projects. In addition \$75,000 has been appropriated for an experimental farm for work in animal husbandry.

The largest appropriation that the station has received for a single line of investigation became available July 1, 1917. This appropriation provides an annual fund of \$50,000 for a complete soil survey of Iowa. The purpose of the survey is to secure information which the farmers of the state need to enable them to make and keep their soils productive. On January 1, 1920, the soils in 33 counties had been

surveyed and complete reports had been published covering the work in 12 counties.

The war-time record of the station measured up to a high standard. President R. A. Pearson rendered service during the war as Assistant Secretary of Agriculture. Twenty members of the staff were on leave for service in the army and ten served on special commissions, production committees and similar organizations. When the call was made by the nation for more wheat and other cereals, for a greatly increased production of cattle and hogs, for larger quantities of dairy products, fruits and vegetables, the Iowa Agricultural Experiment Station responded by suggesting methods for handling soils, using fertilizers, growing crops, feeding livestock and controlling insect pests and plant diseases, all of which helped to make an unparalleled war-time record in food production.

3. AGRICULTURAL EXTENSION WORK

The Iowa State College early established the policy of disseminating information thruout the state by means of lectures and demonstrations. During the winter of 1870-1871 the College organized and conducted farmers' institutes at Cedar Falls, Council Bluffs, Muscatine and Washington. Professor I. P. Roberts, now professor emeritus and for 30 years Professor and Dean of Agriculture at Cornell University, states that "President Welch organized and conducted the first farmers' institutes in the United States."

The work thus early begun was gradually strengthened and enlarged. In a report made in 1883 Mrs. Welch calls attention to a series of lectures on domestic science given in Des Moines to a class of 60. In 1887 funds were set aside by the State Agricultural Society to encourage institutes and a sum of \$150 became available for expenses of faculty members who attended such institutes.

In 1901, a farmers' short course of two weeks duration was organized at the College thru the efforts of Dean C. F. Curtiss. In 1903 the county farm demonstration work with corn began in Sioux County. In April, 1904, the first seed corn special train was run. In January, 1905, the first local short course of one week duration was held at Red Oak, Iowa. All of this work attracted widespread interest and approval.

The demands made upon the College faculty by the farmers of the state had now become so great that it seemed necessary to make some provision to care for it. Accordingly the Thirty-first General Assembly of Iowa passed a bill establishing the Agricultural Extension Department of the Iowa State College and appropriated \$15,000 to cover the annual period from July 1, 1906, to July 1, 1907.

Professor P. G. Holden, who had inaugurated the county farm demonstration work and conducted the seed corn trains, was selected as head of the newly created department and remained in that position for six years. The development of agricultural extension work was

rapid from the beginning. It soon became impossible for the department to meet the demands made upon it for short courses, institutes, educational trains, demonstration plots and miscellaneous meetings. Farmers and business men contributed liberally by taking care of local expenses and often paying salaries of assistants.

The general assembly of Iowa increased the appropriations of the Agricultural Extension Department from time to time. In 1912 certain funds were made annually available by the United States Department of Agriculture. In 1913 the general assembly passed an act which provided that county funds under certain conditions could be used by organizations of farmers in coöperation with the Iowa State College for the advancement of agriculture. In 1914 Congress passed the Smith-Lever act appropriating federal funds to be used by the states in agricultural extension work.

By 1912 the demand for extension work had grown to such proportions that it was impossible to care for it efficiently thru specialists from the College. Accordingly the plan of placing a representative of the College permanently in a county was adopted. This plan, however, depended primarily upon the action of the farmers themselves. It was necessary for them to form an organization and provide funds before state and federal funds were forthcoming. Under this plan the employed agent became jointly responsible to the farmers' organization and to the College.

Clinton and Scott counties employed agents on September 1, 1912. Black Hawk and Montgomery counties employed agents the following October. The work of organizing county farm bureaus and employing agents developed gradually until the entrance of the United States into the World War when 26 counties had been organized. At that time, due to a large increase of federal war funds, the county organizations were pushed forward rapidly until on March 1, 1918, every county had organized a farm bureau and employed or had arranged to employ a county agent.

During the war with Germany the Agricultural Extension Department was selected by the federal government as the agency thru which to stimulate food production in Iowa. The biennial report issued by the department for the period extending from July 1, 1916, to July 1, 1918, summarizes the work of this period as follows:

"Farm labor bureaus were established in every county in the state and 18,400 men were placed on farms. A Volunteer Food Producers' Association was organized with 20,478 members, 6,000 boys were enrolled in the Boys' Working Reserve and 29,648, mostly city boys and girls, were enrolled in the junior garden movement.

"Extension specialists, including boys' and girls' club workers, delivered 17,090 lectures, conducted 8,587 demonstrations and judged 1,988 exhibits. The number of people reached in the above ways in the two years totals 1,324,221. County agents during the same period received 157,365 calls at their offices, made 52,683 farm visits, held 10,640 meetings and reached 514,235 people. Home demonstration

agents gave 6,702 lectures, conducted 4,196 demonstrations, judged 164 exhibits and reached 275,417 people.

"The most important service of the field agents was to locate local leadership and develop the farm bureau organization in order that the government war food program might be carried out. This service cannot be expressed in figures."

It is impossible to state just what effect the Agricultural Extension Department had in stimulating war food production in Iowa. It certainly was an important factor. According to the statistical reports of the United States government, Iowa produced more foodstuffs in 1917 and 1918 than in any other two years in her history and more than any other state. The total average yearly production of corn, oats, wheat, barley and rye for 1917 and 1918 was 661,013,000 bushels. The total average yearly production of the same grains for the 10 year period immediately preceding the war was 522,882,300 bushels. The average increased yearly production for 1917 and 1918 over the average yearly production for the 10 year period preceding the war was 138,130,700 bushels, an increase of about 26 percent. The increase in pounds of pork produced was very large and is variously estimated at from 15 to 25 percent. There was also a great increase in poultry and garden crops.

At the present time (May, 1920), there are 100 county farm bureaus (one county has two) with a farmer membership of more than 100,000. Each county farm bureau elects a president, vice-president, secretary and treasurer and a board of directors composed of one representative from each township. In addition there is a coöperator for every four square miles of farm land. There are 100 county agents, 21 home demonstration agents and 15 boys' and girls' club agents permanently located in counties. Fifty specialists are employed to support the agents in the field. In addition to this, temporary agents and temporary specialists are employed, as occasion may demand, to carry out important projects. The work conducted in coöperation with the local county farm bureaus embraces every department of the Agricultural and Home Economics Divisions of the College and certain subjects from the Veterinary and Science Divisions.

III

THE DIVISION OF ENGINEERING

Engineering instruction of collegiate grade was inaugurated at the Iowa Agricultural College on March 17, 1869, in a Department of Mechanic Arts. Two years later this department was divided into the departments of Mechanical and Civil Engineering, with a professor in charge of each. It was not until 1891 that the Department of Electrical Engineering was established; then followed Mining Engineering in 1894, Ceramic Engineering in 1906 and Architectural Engineering in 1914. Collegiate work in trades and industry was in-

stituted in 1919. In 1898 the various engineering departments were organized as a college division and in 1904 a dean of engineering was appointed to administer them. Anson Marston, who was appointed the first dean of the Engineering Division and still retains the position after 16 years, is a graduate of Cornell University in the class of 1889. He came to Iowa State College as Professor of Civil Engineering in 1892 after doing graduate work at Cornell for three years.

In 1904, the general assembly of Iowa established an Engineering Experiment Station and in the same year also a Department of Good Roads Experimentation, both state supported and the first of their kind in the country to be established by government authority. The Thirty-fifth General Assembly in 1913 created also a Department of Engineering Extension to give residence sub-collegiate work in trades and industry, to conduct special short courses and institutes in various parts of the state and to offer correspondence study of both collegiate and sub-collegiate grade.

Thus the engineering school has grown from one small Department of Mechanic Arts with two instructors, a workshop and less than a score of students, into the largest engineering school west of the Mississippi River, with over one hundred instructors and trained investigators, eleven engineering buildings of the finest type, and over one thousand students of collegiate grade. The Iowa State College was the first school in the country to develop its organization so as to include the three fundamental coordinate lines of engineering educational service: professional education of the highest character; engineering extension and correspondence study to carry technical information to the people in their home communities; and engineering experimentation to develop the practical application of scientific principles for ready use by the people of the state.

During the seventies and the eighties the engineering enrollment was small. About 1889, however, it received a sudden impetus and reached the unprecedented number of 179 in 1892-1893, but the financial flurry at that time reduced the number of students. It was not until about 1898 that it reached 193, thereafter steadily increasing until 1907-1908 when the enrollment was 704. And then came the panic of 1907. For five years the engineering attendance decreased until by 1912-1913 the number was reduced to 495. Rising again, it continued until 1915-1916, then halted pending adoption of our war policy and in 1917-1918 dropped to 575, practically what it was 12 years before. And then came the fall of 1918 and with it the Student Army Training Corps. To the Iowa State College there came a great influx of freshmen engineering students, over a thousand strong, all of them too young to enlist direct, but all confident that training in the Student Army Training Corps would lead directly and speedily to their participation in the World War. The total enrollment that year numbered 1,336, but it was not of course representative of a normal situation. With the signing of the armistice and the disbanding of the Student Army Training Corps, a very great number of

these men left the College, many of them never to return. The large enrollment of engineers for 1919-1920, estimated unofficially at 1,030, is still somewhat abnormally large, being influenced to a considerable degree by the great importance of engineering in the war. But the curve of progress in engineering student enrollment shows a decided tendency upward and this will undoubtedly persist.

Mechanic Arts was a parallel department with Agriculture in the original organization of the College. The first Professor of Mechanic Arts was G. W. Jones. In 1871 he was made Professor of Mathematics and W. A. Anthony became Professor of Physics and Mechanics. He left the College in 1872 to take the chair of physics at Cornell University and was succeeded by A. Thomson who became Professor of Mechanics and Superintendent of the Workshop.

The first class of engineers to receive diplomas in Iowa graduated from Iowa State College in November, 1872. The class numbered eight, all of them receiving the degree of Bachelor of Science. It was not until 1878 that separate degrees were granted to graduates of the different departments. At every commencement since 1872, with the exception of that of 1880, there have been graduates from the engineering departments. Of course the numbers were small in the early days, reaching 10 in 1884 and 14 in 1891, but those were men of sturdy type, many of them having since accomplished distinctive feats in engineering. During the first 25 years of its operation the College graduated but 141 engineers; while during the next 25 years there were over 11 times as many, or 1,581.

The total number of engineering graduates is now 1,778. Of that number nearly 15 percent have graduated in the last three years; over 26 percent in the last five years; practically 45 percent in the last eight years; over 67 percent in the last 12 years; over 80 percent in the last 15 years; and 92 percent in the last 25 years. Taking into account the necessary lag of about four years, the graduating classes have shown about the same upward tendency in numbers as has the enrollment. About 35 percent of freshmen complete their courses.

A most important engineering activity is participation in engineering society work. This opportunity has been materially increased for the engineering students in later years. The all-inclusive society is the Ames Engineering Society, the "get-together" organization of the engineers. It was organized in 1910 to direct all engineering student activities and to publish *The Iowa Engineer*, the official technical organ of the engineering school. Each year there is elected an Engineering Council from the student body which represents all engineering division interests. This council is responsible for the organization of student committees on student affairs, including the Campfire in the fall, Engineers' Day in the spring and various other functions for which the society is famous.

The agricultural engineers have their own student branch of the American Society of Agricultural Engineers; the architectural engineers are organized into a departmental society called the "Crocketts";

the chemical engineers are members of the local branch of the American Chemical Society; the civil engineers have their Civil Engineering Society; the electrical engineers have a student branch of the American Institute of Electrical Engineers; the mechanical engineers have one in the American Society of Mechanical Engineers; and the mining engineers have one in the American Institute of Mining Engineers. In addition there is a college branch of the American Association of Engineers.

A chapter of Tau Beta Pi, a national honorary engineering society, was established at Iowa State College in 1908.

The Iowa Engineering Experiment Station, created by legislative action in 1904 to be under the direction of the Dean of the Division of Engineering, came as a result of commendable experimental work performed without financial support by college professors. It was the first engineering experiment station in the United States to be established under government authority. Only \$3,000 per year was appropriated at first, but increases have been granted from time to time until the fund is now \$25,000 per year. At first part-time student assistants were used under the direction of members of the faculty who were sufficiently interested to give their time gratis to the work. This work has now developed to such an extent that the station force has numbered at times over 20 technical men besides laborers.

The results of station investigations have been published in 60 bulletins for general distribution and much miscellaneous technical information has been sent out in letter form as special reports, where its application was so specific as not to warrant publication. The demand for service is beyond the funds and the facilities at hand to meet it, so that with increasing support the station will continually increase the scope of its activities.

In 1904 the general assembly appropriated \$3,500 per year for good roads experimentation, at the same time designating the College as the State Highway Commission. The State Attorney General ruled that this fund should be used for the maintenance and operation of the commission. This continued until 1913 when the Highway Commission was reorganized with separate funds for its support.

During the nine years prior to 1913 the College so developed the organization and work of the commission that it was ready to accept the larger responsibility which came with its reorganization. The Dean of Engineering acted as a director from 1904 to 1913 and by law became a commissioner under the new organization.

Since 1913 the fund appropriated for good roads experimentation, now \$10,000 per year, has been used for good roads experimental work exclusively, in coöperation with and under the direction of the State Highway Commission in solving those technical problems peculiar to Iowa road conditions.

In 1913 the Engineering Extension Department was organized, for the purpose of taking industrial trade information to those who cannot come to the College for it. Short courses for plumbers, metermen,

firemen, janitors, telephone operators, bakers, painters, dyers and cleaners are held at various points thruout the state where specialists from this department disseminate the latest and most practical information available. Many short courses are also given at the College where their nature requires the use of more extensive laboratory facilities than can be supplied at outside points.

This department also handles the courses in trades and industries, most of them two years in length, and leading to certificates upon completion. This year, in these courses designed particularly for the training of artisans, construction foremen and draftsmen, there are enrolled 144, of whom 89 are wounded or disabled service men, receiving their government training here.

IV

THE GRADUATE COLLEGE

The early history of the Iowa State College was molded by a group of men, president, faculty and trustees, who had high ideals of education. President Welch and Dr. Bessey believed that the highest and best in education was none too good for the youth of Iowa. They recognized that a faculty graced an institution not only by ability to teach but also by productive research. It is not surprising, therefore, that in 1873, the year following the graduation of the first class, one graduate student, C. P. Wellman was enrolled. During the next two years four such students were enrolled. Every year since that time graduate students have pursued work at the Iowa State College.

In December, 1876, the Board of Trustees upon recommendation of the president granted to the faculty authority to establish "post-graduate courses of study and to confer upon those who should pass said courses a second degree." The faculty, so the report of the president for 1877 states, "have therefore during the past year arranged a carefully considered program of post-graduate studies. All students desiring to secure a second degree must pursue a course of study embracing two or more subjects selected from this program and approved by the faculty. At least one year will be required to complete the course."

On November 12, 1877, the first advanced degree was granted by the College to J. C. Arthur, a graduate of the class of 1872, who had completed his graduate work in botany under Dr. Bessey. Dr. Arthur has been almost from that time Professor of Botany at Purdue University and has achieved an international reputation as an authority on plant rusts. Since that date the Department of Botany, under the leadership of Drs. Bessey, Halsted and Pammel, has consistently encouraged advanced work. Altogether 39 graduate students have secured the degree, Master of Science, and two the degree of Doctor of Philosophy, as a result of graduate work in this department.

The technical branches of the College were early recognized as offering graduate opportunities and provision was made for granting

the degrees Civil Engineer and Mechanical Engineer. The first C. E. degree was conferred in 1879 upon Charles F. Mount. This was the precursor of the professional degree of today. It is of interest to note that this degree was next conferred upon Elwood Mead in 1883 and upon Miss Elmina Wilson in 1894. A total of 80 professional (advanced) degrees have been granted to date (1919) in Civil Engineering and 60 in all other departments of engineering combined.

Herbert Osborne in 1880 received the degree of Master of Science with major work in zoology. He was soon thereafter put in charge of the newly created Department of Zoology and by the time of his resignation in 1898 he developed the work in entomology to a marked degree. He left to become head of the Department of Zoology and Entomology at the State University of Ohio, where he has developed one of the strongest departments in that field in the United States.

Special mention should also be made of the conferring of the degree of Master of Domestic Economy in 1886 upon Miss Nellie E. Rawson and upon Mrs. Clara J. Hays. It is probable that this was the first recognition in the United States of the field of Home Economics as one appropriate for graduate work.

For many years the graduate work of the College was administered by a committee on graduate work; first with Professor Osborne, later, Professor H. E. Summers and finally with President Pearson as chairman. As the enrollment grew, the difficulties of administration increased and plans were made to centralize and coordinate the graduate work. The catalog of 1913 states that "the administration of all graduate work will be placed in the near future in a separate division to be known as the Graduate College. The new division will be presided over by a dean." During the next several years the work was administered through the office of the president. Professor George A. Chaney was made assistant to the president in charge of the graduate work. Finally in 1919 R. E. Buchanan, Dean of the Division of Industrial Science, was transferred to the deanship of the newly created Graduate College and it is now under his immediate jurisdiction.

During the recent war the attendance was cut about 40 percent; but it is now greater than at any time in the history of the College. The enrollment for 1919 was 153.

The degree of Master of Science was first conferred in 1877, only eight years after the College was founded. Only a few commencements since 1877 have failed to see the conferring of at least one master's degree. The largest number, 49, was given in 1917. In all 288 master's degrees have been conferred.

The Doctor of Philosophy degree was conferred upon only five students prior to 1920. Two of these degrees were conferred by the Botany Department, two by the Agronomy Department and one by the Animal Husbandry Department. Of professional degrees, 146 have been given, 140 in engineering and 6 in agriculture.

V.

THE DIVISION OF HOME ECONOMICS

At the opening of the Iowa State College a large number of young women enrolled and the practicability of giving them technical training in housekeeping suggested itself to the College authorities. Mrs. Mary B. Welch, wife of the president of the College, was asked to direct this work. Under her guidance the women were given three hours a week of practice in domestic science. Mrs. Potter, the matron, planned a rotation system of work in the kitchen, dining room and laundry whereby each student received instruction. Thus the courses at the beginning were laboratory courses, but by 1871 Mrs. Welch had begun to supplement them by lectures.

The work developed rapidly under Mrs. Welch's guidance and in 1875 a Department of Cookery and Household Art was established. The following year the trustees provided for practical instruction in cookery by authorizing the establishment of an experimental kitchen for class use. This kitchen, located in the basement of the old main building, was as far as known, the first of its kind provided in any college. At each meeting the cooking of some new dish was carefully taught, the class taking notes and assisting the teacher. At the following meeting the students repeated the work unassisted by the teacher, each being responsible for the material wasted if her work failed.

The scope of the department was enlarged in 1877 by the addition of several new courses; care of the house, plan of the week's work, care of the sick, management of domestic help, training of children, sewing and cooking. Two years later a course in laundering was added and the girls were required to do their own laundry work. The present course in institutional cookery may also be traced back to this year, when the cooking classes prepared and served meals for one table in the main dining room.

This College was one of the six institutions that gave courses in cookery and sewing at this time and the high standard of its work was acknowledged in a bulletin published by the Bureau of Education in Washington and by the New York Tribune, Chicago Inter-Ocean, Detroit Free Press, Youth's Companion and the Iowa journals. By 1881 the School of Domestic Economy had outgrown its quarters and was moved to South Hall.

In 1883 Mrs. Welch resigned, having given 15 years of conscientious service to the School of Domestic Economy. She succeeded in laying firm foundations at a time when domestic economy was regarded as a novelty in the college and university curricula of the country and hence she was notably a pioneer in the field of the household arts. She had, as pioneer laborers in other fields have had, stubborn difficulties with which to contend. In the first place she had no knowledge by which to guide herself, save that acquired in the keeping of her own home; and second, she had to toil in the face of a solid conservatism and popular prejudice against her work. The masses could

not then appreciate the value of academic instruction in the household arts and they had little understanding of their relations to other arts.

The first difficulty Mrs. Welch overcame by studying at the "School of Maids" in London and with Miss Parloa at New York. Also she expanded her knowledge and quickened her spirit by visiting the schools of cookery in leading cities. The second obstacle she attacked and reduced somewhat by the practical character of her work at college and by lectures to some of the most progressive housewives in the state. She conceived the idea of the practical utility of extension work and established a precedent for it that has received a wide application throughout the country, when she conducted a class of 60 women in Des Moines.

Mrs. Emma P. Ewing took up the direction of the department in 1884 and pushed with vigor the work begun by Mrs. Welch. A two-year collegiate course in domestic economy was organized and opened in South Hall. Nine women were classified in this course. During the same year a two-year post-graduate course was established with authority to confer the degree of Master of Domestic Economy. College and university graduates enrolled for the post-graduate work. Mrs. Ewing was greatly handicapped in her enlarged field of activity by a paucity of funds. During her four years of incumbency the total expenses of her department amounted to only \$900. She and her assistants, some of whom she employed at her own expense, gave their classes eight hours daily of their attention. Their labors bore fruit, for soon Boston, Baltimore, St. Paul and other cities were seeking teachers from their department and they placed one of their post-graduate students in the Toledo Manual Training School.

In 1887 Mrs. Eliza Owens took charge and during the nine years of her direction the school advanced steadily, although the two-year post-graduate course had to be abandoned until 1894 because of lack of room. In that year Margaret Hall was built and the school moved into one wing of it.

Miss Gertrude Coburn, who was head of the department from 1898 to 1899, secured the incorporation of a four-year "Ladies Course," leading to the degree of Bachelor of Letters. The aim of the course was to correlate the other sciences with housekeeping. She instituted the present practice of charging laboratory fees, which was advised by Mrs. Welch at the outset. A fee of two dollars was charged for the first term of cooking, three dollars for each succeeding term and one dollar for each term of sewing.

Under the supervision of Miss Mary Sabin the course was divided in 1901 into the Departments of Domestic Science and Domestic Art and three assistants were employed. Two courses were offered in 1904, the "General and Domestic Science" course and the "Domestic Science" course.

From 1905 to 1912 the home economics work progressed steadily under the leadership of Miss Georgetta Witter (now Mrs. F. H. Waters), Mrs. Alice Dynes Fueling and Miss Virgilia Purmort. By

1910 the available space in Margaret Hall and the old Agricultural Hall was inadequate for the needs of the department and the present Home Economics building was formally opened in the fall of 1911.

In 1912 the department became a division with Miss Catherine J. MacKay, who had been a professor in the department since 1910, as acting dean. The following year she was appointed dean of the division. In 1913 the Omicron Nu, an honorary home economics organization, was established as a further incentive to higher scholastic efforts. The growth of the division is revealed by the fact that at the present time there are 38 instructors and 722 students as against 4 instructors and 136 students in 1911. At present there are seven departments in Household Art, Household Management, Applied Design, Household Science, Teacher Training, Two-Year Non-Collegiate and Physical Training. The Home Economics building is no longer adequate, two emergency buildings and two offices and laboratories in Chemistry building having been in use during the past four years. In 1916 the Practice Cottage was opened and here the senior girls have actual experience in household management. A third temporary building will be ready for use in the fall of 1920.

The originators of agricultural extension work in Iowa conceived the very practical idea that extension work should include the entire family, and when the department was organized, July, 1906, Miss Mary F. Rausch was appointed to take charge of the home economics work in the agricultural extension service. It was a new line of work and Miss Rausch very wisely planned to present it in such a way as to make it entertaining as well as instructive. Her first programs were presented at women's short courses and, while they included as much of the fundamentals of homemaking as could be introduced, they consisted largely of food demonstrations. These short courses were presented through the activities of women's clubs. This, again, was starting along the line of least resistance; women's clubs were already organized and they presented a logical medium through which to work.

In August, 1906, Miss Rausch left the department to take charge of work in Colorado and Miss Edith Charlton from Rochester, New York, succeeded her. It became necessary to employ an assistant and Miss Neale S. Knowles, who at that time was in charge of the same kind of work in Alabama, was selected. They continued to work through short courses, farmers' institutes, county and state fairs.

In April, 1909, Miss Charlton left the department and Miss Knowles assumed the leadership. A little later it became necessary to employ three more women. The work was carried on through continuous short courses, each one week in duration. The programs included food demonstrations, home nursing, house furnishing, care of children, drafting and use of patterns and home management. This kind of home economics work grew so rapidly that it was necessary to employ 10 women.

The home economics extension work became affiliated with the farm bureau extension service in September, 1916, when Miss Tura



EDGAR W. STANTON
Acting President 1890-1891; 1902-1903; 1911-1912



WILLIAM M. BEARDSHEAR
President 1891-1902

Hawk was appointed home demonstration agent in Black Hawk county. In April, 1917, 23 women were employed to give special instruction in food conservation, as a part of the regular war work. One hundred home demonstration agents were placed in counties and cities for a three-months' experiment. Home demonstration agents were retained in 58 counties, during the war. The experiment was so successful that sufficient additional appropriations were made to establish the work permanently in 25 counties and one city. The home economics extension work at the present time is carried on through these home demonstration agents, working with definite organizations of men and women, in connection with the farm bureaus. These home demonstration agents are assisted in their projects by six home economics specialists, two of whom are specialists on organization and administration, two on food and two on clothing.

The work has passed through the first stages in which it was necessary to present spectacular demonstrations. The people now appreciate the significance of the extension work and are seeking solid information instead of entertainment and excitement.

VI.

THE DIVISION OF INDUSTRIAL SCIENCE

The fundamental major sciences administered in the Division of Industrial Science are bacteriology and hygiene, botany, chemistry, economics, geology, mathematics, military science and tactics and zoology. The general subjects not offering undergraduate degrees but necessary to promote the "liberal and practical education of the industrial classes", are English, history, library, modern language, music, physical training, psychology and public speaking. Of the eight fundamental sciences noted above, including also physics, all are listed in 1870 except bacteriology, which was added in 1888; and of the general subjects all are listed, in most cases under substantially the same titles. It is therefore a striking fact that while courses of study, subjects offered and names of departments have been in a state of more or less constant flux, the fundamental major sciences have appeared in every catalog and biennial report from the beginning.

The name, Division of Industrial Science, is peculiarly appropriate when judged from the standpoint of historical development. The word "industrial" and other statements having exactly the same meaning appear in the organic acts and practically all the early documents of the College. By the "industrial sciences" are meant the nine fundamental major sciences noted above and their various applications. President A. S. Welch in his Inaugural Address, March 17, 1869, dedicated "these halls to the progress of industrial sciences", referred in 1876 to the "national industrial college now established in nearly every state in the union," and in fact, suggested the name Industrial College. The term "special industrial sciences," was used in 1876 to

indicate certain group systems whereby juniors and seniors might specialize in such subjects as agriculture, botany, chemistry, geology, horticulture, physics, veterinary science and zoology. No end of references to official documents might be given to show that industrial science is the one and only general term which comprehends the work of all major departments in the College.

Prior to 1898 the term "division" does not appear. The institution had been administered in a highly centralized form and on a departmental basis. In 1898 the term "division" was used by President W. M. Beardshear in connection with agriculture, engineering, science and philosophy and veterinary medicine; the name "Science and Philosophy" being changed to "Science as Related to the Industries" in 1900 and to "Industrial Science" in 1913. It was, however, during the administration of President A. B. Storms that the plan of administration of deans was adopted. "For greater efficiency", said President Storms, "the College should be organized under deans". The Divisions of Agriculture, Engineering, Science as Related to the Industries and, later, Veterinary Medicine and Home Economics made their appearance in fact, the President being made Dean of the Division of Science as Related to the Industries.

Bearing these facts in mind it is evident that the term Industrial Science, which formerly comprehended all the technical work of the institution, is now used in a more restricted sense for purposes of administration to include the nine fundamental sciences, except physics, and those specialized and technical applications of science which cannot be placed in any of the other divisions without a needless and very expensive duplication of educational effort. "For greater efficiency", four strong divisions in recent years have emerged from the parent trunk, "Industrial Science", certain clearly marked spheres of technical applied science being delegated from time to time to each division by authority of the board. Those numerous and important applications of science not so delegated remain in the Division of Industrial Science.

Hygiene and physiology were in the course of 1870. The course in bacteriology, first taught at Iowa State College in 1888, was the first regular course of its kind given in any institution in the United States, including medical schools. In 1908, bacteriology became a separate department with Dr. R. E. Buchanan in charge. The work has grown rapidly, particularly as related to soils, dairying, veterinary medicine and immunity and serum therapy.

Botany has always been one of the strong and essential departments of the institution. First in the country to use the compound microscope in the study of plants, to conduct regular laboratory instruction, to recognize the importance of economic botany and, finally, to teach bacteriology, the department of botany has an enviable record from the standpoint of instruction, research and public service. Dr. C. E. Bessey, for a long time in charge, was recognized as an eminent scientist and served as President of the American Association for

the Advancement of Science. Dr. L. H. Pammel, now chairman of the state board of conservation, and his assistants have turned out a large and varied amount of productive scholarship. The alumni of the department include secretaries of the national botanical organizations, two vice-presidents of Section G of the American Association for the Advancement of Science, three presidents of the botanical Society of America, one vice-president and one president of the American Phytopathological Society.

Chemistry was under the direction of A. E. Foote, 1868-1874, E. R. Hutchins, 1874-1876; Thomas E. Pope, 1876-1885; L. W. Andrews, 1885-1886; A. A. Bennett, 1886-1913. In 1914, one of the three largest and best equipped buildings in the country, devoted exclusively to chemistry, was completed. More than 2,300 students are now enrolled in this department. New lines of work are being built up, both elementary and advanced, with stress on graduate and research work.

Economic science was under the supervision of President A. S. Welch, 1870-1877; Dr. E. W. Stanton, 1877-1902; Dr. B. H. Hibbard, 1902-1912. In recent years the policy has been to stress the applications of economic science as indicated by the following groups: agricultural economics, business engineering, rural sociology and, finally, the economics of consumption to meet the special needs of students in home economics.

During the entire history of the College, documentary sources show that a reasonable amount of work in English composition and in literature has been regarded as a necessity.

Geology and mineralogy appear in the first course of study in 1870. Work in this field has been given in connection with physics, chemistry biology and zoology, a separate department being established in 1898 with Dr. S. W. Beyer in charge. At the same time mining engineering and in 1904 ceramic engineering were added. In 1919 geology was transferred to the Division of Industrial Science. At the present time this subject is required in architectural, ceramic, chemical, civil engineering courses and also in farm crops, soils and forestry.

History was under the direction of W. H. Wynn, 1871-1887, 1894-1900; A. C. Burrows, 1888-1894; Dr. O. H. Cessna, 1900-1920. In recent years the tendency has been to stress the special applications of history with emphasis on the economic history of agriculture.

President A. S. Welch was Professor of Psychology, 1869-1887; President W. I. Chamberlain, 1887-1890; President W. M. Beard-shear, 1890-1900; and Dr. O. H. Cessna, 1900-1920. The work in psychology is not only designed for those who enter the teaching profession, but specialized courses for the development of business efficiency are given to technical students.

The necessity of a library was officially recognized a decade before the opening of the College in 1868, and was given a support of \$2,500 in 1869, resulting in a collection of 2,400 volumes in 1870.

The Department of Mathematics was in charge of G. W. Jones,

1869-1874; A. H. Porter, 1874-1877; and Dr. E. W. Stanton, 1877-1920. Professor Jones taught algebra, geometry, trigonometry, analytic geometry, differential and integral calculus, drawing and mechanics and some additional engineering work. Professor Stanton carried all the work, including political economy, until 1894 when a second instructor was added, the number increasing to 14 full time and two half-time teachers at the present time.

The Department of Military Science and Tactics has always had at its head able soldiers who have distinguished themselves on the battlefield; General J. L. Geddes, 1869-1882; Colonel John Scott, 1882-1884; General J. R. Lincoln, 1884-1919. This institution, in common with all land grant colleges, has devoted much attention to military training. The department may well be proud of the part it had in the military record of the College during the World War — 2,265 blue and 52 gold stars in its service flag, 2 brigadier generals, 3 colonels, 9 lieutenant colonels, 31 majors, 98 captains, 536 lieutenants.

The modern language department has been under the direction of 12 persons. A reading knowledge of French and German has always been regarded as desirable for the definite reason that a vast storehouse of valuable scientific literature is printed only in these languages. In recent years, Spanish has become necessary to many technical students because of our close relations with Latin America.

While music has been appreciated and provided for since the opening of the College it has not been recognized as an integral part of regular college work, altho it is recognized that music for the many is quite as desirable as athletics for the many.

Physical training was supplied during the early years of the College in the form of actual labor in the fields and shops, this being the idea which prevailed of "Science with Practice". In fact, prior to 1890 organized athletics were unknown and for the first 20 years received no financial assistance and very little encouragement from the College. The department moved from the basement of Morrill Hall to a temporary training shed near the water tower, later to the third floor of the Engineering Annex and, finally, indoor sport was made practicable by the completion of the present fine gymnasium in 1913 and the reorganization of the work on the present thoroly efficient basis.

The name "Cyclones" originated in 1895 when Ames defeated Northwestern 36 to 0 and a Chicago paper printed the headline, "Cyclone Strikes Northwestern University." At the present time Iowa State College is a member of the Iowa Intercollegiate Athletic Association in charge of field and track sports, the Iowa Intercollegiate Tennis Association and the Missouri Valley Conference.

Public speaking was given in connection with English, or by the preceptress, librarian, or teacher of music, during the early years. It was made a separate department in 1896 with Professor A. M. Newens in charge.



ALBERT B. STORMS
President 1903-1911



RAYMOND A. PEARSON
President 1912-date

Zoology, including entomology and human psychology, was given in 1870, embryology and evolution of animals during the eighties and apiculture was established as a regular course of study in 1916. The history of this department may appropriately be divided into four periods: first, 1870-1884 when Dr. C. E. Bessey, one of America's great scientific men and inspiring teachers, was in charge; second, 1885-1898, when Dr. Osborn made the department one of the strongest centers of entomological research and scientific activity in the United States, turning out no less than ten productive scholars who achieved a national reputation for their research work; third, 1898-1916, when Professor H. E. Summers directed the work in a most creditable manner, the development keeping pace with the rapid growth of the institution; and fourth, 1916-1920, during which period the work has been marked by a revival of entomology research.

VII

THE DIVISION OF VETERINARY MEDICINE

The first reference to veterinary work in connection with the Iowa State College is found in the state law establishing the Agricultural College and Farm. This law was passed by the legislature in 1853. An outline of "The course of instruction in said college" includes "Animal and Vegetable Anatomy" and "Veterinary Art". In the report of 1866 emphasizing the application of scientific principles the following is found:

"It is only necessary to instance the general ignorance which prevails in the veterinary art — the treatment of diseases of animals — a knowledge of which would save thousands of dollars annually to the state."

The committee on organization of the College and selection of the faculty recommended on January 15, 1868, that among the studies to be included in the course should be "Animal and Veterinary Anatomy and Physiology" and "Veterinary Art."

The first class to graduate from this institution received instruction from a veterinarian, Dr. H. J. Detmers, in 1872. Dr. Miliken Stalker received an inspiration from Dr. Detmers and entered the study of veterinary medicine under Dr. Liautard of New York City and Dr. Smith at the Toronto Veterinary College, from which institution Dr. Stalker received his degree. Considerable veterinary work was included in the agricultural course and in 1877 the records show that a Department of Veterinary Science was recognized. On May 23, 1879, authority was granted for the addition of one year of veterinary work to that already offered and the granting of degrees and diplomas to those who completed such course. Thus the official establishment of a veterinary school was accomplished May 23, 1879. On November 12, 1879, \$4,000 was appropriated for the building of a veterinary hospital. The first class to graduate from a state institu-

tion in America graduated from the Iowa State College in 1880. During the first 10 years 43 men were graduated as veterinarians. During the next 10 years (1890 to 1900) 58 veterinarians were graduated. During the last decade (1910-1920) 214 veterinarians were graduated, making a total of 401 graduates.

During the year 1884 and 1885 a brick building was provided for clinics and dissection which remained in use until 1912. Dr. Stalker, who was head of the Veterinary School from its beginning until 1900, was also state veterinarian. Dr. Fairchild was assistant in giving work along veterinary lines (1886) and later Dr. W. B. Niles was added to the faculty (1890). In 1900 the faculty was increased to four graduate veterinarians and an appropriation of \$100,000 for buildings was urged. During 1903 the course was extended from three to four years and the class entering in the fall of 1903 was the first class to enter a veterinary college in the United States with a view to taking a four year course in this line of work. In 1908 Dean J. H. McNeil, who took Dr. Stalker's place upon his resignation, resigned. In 1909 something over \$200,000 was appropriated for buildings in order to place the Veterinary Division on a basis where it could adequately meet the demands made upon it by the students and the livestock industry of the state. During the biennial period of 1910 to 1912 the new buildings were completed, new equipment installed and the number of veterinarians on the faculty doubled.

The entrance requirements were also placed on the same plane of those of other divisions of the institution (15 units high school). During the biennial period of 1913 to 1914 a veterinary research department was established with an annual budget of \$10,000.

At the same time the State Biological Laboratory was established in connection with the division and there was a 50 percent increase in the veterinarians on the faculty, in addition to four extension veterinarians. If laboratory assistants and technicians are considered the working force of the division was multiplied five times in the preceding five years.

VIII

THE NON-COLLEGIATE DEPARTMENT

When the Iowa State College was founded the opportunities for a preparatory or high school education were so limited that only a few students were prepared to do college work, hence the College was forced to give more or less preliminary training until high school facilities of the state were more fully developed. Those taking the preparatory work were designated as partial freshmen, preparatory students, academic students or sub-freshmen. As secondary educational facilities advanced the college discouraged enrollment in the preparatory department. This policy received concrete expression as

early as 1880, as is illustrated by the following passage taken from the catalog of that year:

"Should there be room in the dormitories after the students in regular classes are provided for, a limited number of students may be received for instruction in studies preparatory to the freshmen class. It is, however, the wish of the faculty and trustees that the number taking the sub-freshmen course be as small as possible."

The policy was soon revealed also by the reduction of the enrollment in the preparatory department. The number of preparatory students in the period of 1870 to 1893 was reduced from 82 to 40 and in 1910 the preparatory department was abolished.

Meanwhile the lack of preparatory school facilities and the great industrial expansion of the country produced a demand for special courses of short duration along technical lines. To this demand a response was made in 1892 by the establishment of a winter course and a two year course in agriculture. The reason set forth for these courses was that a "state institution should offer every possible encouragement to those who desire to fit themselves to do their chosen work in the best manner." The scope of the non-collegiate work was enlarged in 1899 by the addition of a one-year course in dairying, a two-year course and a review course of 16 weeks for mine operators and employees, a two-year course in clay working in ceramics and by a one-year course in poultry husbandry in 1908.

In 1910 conspicuous changes were made in the non-collegiate work. The preparatory work and all of the special courses, except the one-year course in dairying, were abolished. But the demand for special vocational instruction for mature boys and girls, who had not been able to complete the high school work, led to the installation of other non-collegiate short courses. A two-year course in agriculture, which was declared to be "not preparatory," was offered in the fall of 1910. The spontaneous response to this special agricultural course suggested the need of similar courses in other fields. Hence in 1913 two-year courses in home economics and in trade school work along electrical, mechanical and civil engineering lines were offered. These courses, to which have been added a two-year course for herdsmen, a one-quarter course for automobile mechanics and a one-quarter course for draftsmen, are still given. The following excerpt from the Biennial Report of the Board of Education for 1910, which discloses the reasons for offering within certain limitations the two-year course in agriculture, explains also the purpose for offering with similar limitations other non-collegiate short courses since then:

"Yielding for the time to what seemed to be not only a popular demand but a public need, the board has sanctioned the installation at this institution of a two-year's course in agriculture, which students who have completed the studies usually designated as the "common branches" may enter, but from which any student who is prepared to enter the regular college course in agriculture shall be excluded. It should make no draft either on the income or energy that sustains

and upholds the collegiate courses and, when this work can be done to advantage elsewhere, it should be discontinued."

The policy of the College has constantly been to leave the preparatory work entirely to the high schools as they developed the capacity to take care of it. The installation and elimination of non-collegiate courses have been a barometer of the needs and general trend of education in the state.

The non-collegiate courses in trades, industry and agriculture are meeting the needs of a great mass of young men who do not possess the complete college entrance requirements. The experience and tragedies of the war have increased the demands for short courses of instruction in technical lines. The emphasis of the war upon technical efficiency convinced young men of the indispensability of college training in the great period of industrial expansion and competition which the armistice ushered in; and the mutilated, supported by a generous nation, are coming to the technical colleges to equip themselves speedily by short courses for the change of vocation that has been forced upon them. In the session of 1919-1920 there were 583 students enrolled in the non-collegiate courses, 240 of whom were Federal Board students.

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